

What is claimed is:

1     1.     A wireless network system for use with two vehicles, said system comprising:  
2             a first relay device including first and second Bluetooth® modules, each of the first  
3     and second Bluetooth® modules capable of performing a cable communication irrespective  
4     of which is a master or slave; and  
5             at least one first wireless terminal including a third Bluetooth® module,  
6     wherein the first and third Bluetooth® modules structure a first piconet in which the first  
7     Bluetooth® module is a master, and the third Bluetooth® module is a slave,  
8             the second Bluetooth® module structures a second piconet;  
9     and wherein the first piconet and the second piconet structure a network.

1     2.     The wireless network system according to claim 1, comprising:  
2             a second relay device including a fourth Bluetooth® module; and  
3             at least one second wireless terminal including a fifth Bluetooth® module,  
4     wherein the second, fourth, and fifth Bluetooth® modules structure a second piconet in  
5     which the fourth Bluetooth® module is a master, and the second and fifth Bluetooth®  
6     modules are slaves.



1     3.       The wireless network system according to claim 1, comprising:  
2             a second relay device including fourth and sixth Bluetooth® modules, each of the  
3     fourth and sixth Bluetooth® modules capable of performing a cable communication  
4     irrespective of which is a master or slave;  
5             at least one second wireless terminal including a fifth Bluetooth® module;  
6             the second and fourth Bluetooth® modules structure a third piconet in which the  
7     fourth Bluetooth® module is a master, and the second Bluetooth® module is a slave;  
8             wherein the fifth and sixth Bluetooth® modules structure a third piconet in which  
9     the sixth Bluetooth® module is the master, and the fifth Bluetooth® module is the slave; and  
10            wherein the first, second, and third piconets structure a network.

1     4.       The wireless network system according to claim 1, wherein the first and third  
2     Bluetooth® modules communicate with each other with transmission electricity conforming  
3     to a class 2 or 3 of a Bluetooth® standard.

1     5.       The wireless network system according to claim 2, wherein the second, fourth, and  
2     fifth Bluetooth® modules communicate with one another with transmission electricity  
3     conforming to a class 1 of a Bluetooth® standard.



1    6.        The wireless network system according to claim 5, wherein the fifth Bluetooth®  
2    module includes means for restricting transmission electricity.

1    7.        The wireless network system according to claim 3, wherein the second and fourth  
2    Bluetooth® modules communicate with each other with transmission electricity conforming  
3    to a class 1 of a Bluetooth® standard.

1    8.        The wireless network system according to claim 3, wherein the fifth and sixth  
2    Bluetooth® modules communicate with each other with transmission electricity conforming  
3    to a class 2 or 3 of a Bluetooth® standard.

1    9.        The wireless network system according to claim 1, wherein an SCO link or an  
2    ACL link is established between the Bluetooth® modules.

1    10.       The wireless network system according to claim 1 or 2, wherein, in the first  
2    relay device, the first and second Bluetooth® modules are controlled by common control  
3    means.



1 11. The wireless network system according to claim 10, wherein the first and second  
2 Bluetooth® modules and the control means are connected together via a bus.

1 12. The wireless network system according to claim 3, wherein, in the second relay  
2 device, the fourth and sixth Bluetooth® modules are controlled by common control means.

1 13. The wireless network system according to claim 12, wherein the fourth and sixth  
2 Bluetooth® modules and the control means are connected together via a bus.

1 14. A wireless communications method in a wireless network system constructed by a  
2 plurality of Bluetooth® terminals, wherein  
3 the system comprises:  
4 a first relay device including first and second Bluetooth® modules, each of the  
5 Bluetooth® modules performs a cable communication irrespective of which is a  
6 master/slave; and  
7 at least one first wireless terminal including a third Bluetooth® module, and  
8 in the method,



9           the first and third Bluetooth® modules communicate with each other on a first  
10   piconet in which the first Bluetooth® module is a master, and the third Bluetooth® module is  
11   a slave,  
12           the second Bluetooth® module communicates with any one of the other Bluetooth®  
13   modules on a second piconet, and  
14           the first Piconet and the other piconet structure a network.

1   15.     The wireless communications method in a wireless network system according to  
2   claim 14, wherein  
3           the system comprises:  
4           a second relay device including a fourth Bluetooth® module; and  
5           at least one second wireless terminal including a fifth Bluetooth® module, and  
6           in the method,  
7           the second, fourth, and fifth Bluetooth® modules communicate with one another on  
8   a second piconet in which the fourth Bluetooth® module is a master, and the second and  
9   fifth Bluetooth® modules are a slaves, and  
10           the first and second piconets structure a network.



1     16.     The wireless communications method in a wireless network system according to  
2     claim 14, wherein  
3             the system comprises:  
4             a second relay device including fourth and sixth Bluetooth® modules, and each of  
5     the Bluetooth® modules performs a cable communication irrespective of which is a  
6     master/slave; and  
7             at least one second wireless terminal including a fifth Bluetooth® module, and  
8             in the method,  
9             the second and fourth Bluetooth® modules communicate with one another on a  
10    third Piconet in which the fourth Bluetooth® module is a master, and the second Bluetooth®  
11    module is a slave,  
12             the fifth and sixth Bluetooth® modules communicate with each other on a third  
13    piconet in which the sixth Bluetooth® module is the master, and the fifth Bluetooth® module  
14    is the slave, and  
15             the first, second, and third piconets structure a network.

1     17.     The wireless communications method in a wireless network system according to  
2     claim 14, wherein the first and third Bluetooth® modules communicate with each other with



3 transmission electricity conforming to a class 2 or 3 of a Bluetooth® standard.

1 18. The wireless communications method in a wireless network system according to  
2 claim 15, wherein the second, fourth, and fifth Bluetooth® modules communicate with one  
3 another with transmission electricity conforming to a class 1 of a Bluetooth® standard.

1 19. The wireless communications method in a wireless network system according to  
2 claim 18, wherein the fifth Bluetooth® module restricts transmission electricity.

1 20. The wireless communications method in a wireless network system according to  
2 claim 16, wherein the second and fourth Bluetooth® modules communicate with each other  
3 with transmission electricity conforming to a class 1 of a Bluetooth® standard.

1 21. The wireless communications method in a wireless network system according to  
2 claim 16, wherein the fifth and sixth Bluetooth® modules communicate with each other  
3 with transmission electricity conforming to a class 2 or 3 of a Bluetooth® standard.

1 22. The wireless communications method in a wireless network system according to



2 claim 14, wherein an SCO link or an ACL link is established between the Bluetooth®  
3 modules.

1 23. The wireless communications method in a wireless network system according to  
2 claim 14 or 15, wherein, in the first relay device, the first and second Bluetooth® modules  
3 are controlled by common control means.

1 24. The wireless communications method in a wireless network system according to  
2 claim 23, wherein the first and second Bluetooth® modules and the control means are  
3 connected together via a bus.

1 25. The wireless communications method in a wireless network system according to  
2 claim 16, wherein, in the second relay device, the fourth and sixth Bluetooth® modules are  
3 controlled by common control means.

1 26. The wireless communications method in a wireless network system according to  
2 claim 25, wherein the fourth and sixth Bluetooth® modules and the control means are  
3 connected together via a bus.